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### Title

The role of informal collaborations in the social sciences and humanities

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### Abstract

The analysis of how research contributes to society typically focuses on the study of those transactions that are mediated through formal legal instruments (research contracts, patent licensing and creation of companies). Research has shown, however, that informal means of technology transfer are also important. This paper explores the importance of informal collaborations and provides evidence of the extent to which informal collaborations between researchers and non-academic partners' take place informally in the Social Sciences and Humanities (SSH). Data is obtained from two studies on knowledge exchange involving researchers working in the SSH area of the Spanish Council for Scientific Research (CSIC). We show that informal collaborations not officially recorded by the organization, are much more common than formal agreements and that many collaborations stay informal overtime. We explore the causes of such prevalence of informality and discuss its policy implications.

### Keywords

Informality, collaborations, knowledge exchange, social sciences, humanities, public research organization.



UAM-Accenture Chair



## 1. Introduction

Knowledge generated in academic contexts can be applied to the solution of technical or social problems in many different ways. Typically, such application will not be carried out by the academics themselves and will therefore require some collaboration between academics and other societal groups. These collaborations often leave a trail in the form of official documents, when this happens we can say the collaboration has been formalized. For instance, contracts may be written to frame the terms of a research collaboration, academics may protect their IP through patenting and then license the use of such patents, and academics may participate in the creation of firms to exploit the knowledge they have generated. These activities generate documentary evidence that can then be used to generate data. As monitoring and evaluation of the use of research results is becoming widespread, these data are becoming increasingly important: the extent to which they provide a fair reflection of the collaborations that academics establish with potential non-academic beneficiaries of their research becomes an important question both from a policy and analytical perspective.

By turning the attention towards the existing studies on the use and impact of academic research, we note that the literature has traditionally focused on a limited range of these documented or formal activities, which is explained by their higher visibility and traceability compared to informal activities that do not embody a legal contractual instrument. This is problematic since those studies that have addressed informal collaborations have found that both firms and researchers rank them highly among the wide range of knowledge exchange and transfer activities (Abreu et al., 2009; Agrawal and Henderson, 2002; Cohen et al., 2002; Meyer-Krahmer and Schmoch, 1998). On the one hand, informal collaborations are hard to capture and quantify, and careful field research needs to be conducted to generate data (Amara et al., 2013; Grimpe and Fier, 2010; Link et al., 2007). On the other hand, ignoring informal links and focusing only on formal mechanisms is likely to be too narrow an approach to provide a balanced and comprehensive perspective on knowledge exchange processes.

Our interest in informality was triggered when, during a project to assist in the development of CSIC's social scientists collaborative links with non-academic users and beneficiaries of its research, we realized that many existing collaborations were not reported in the corporate database of contracts and collaboration agreements. This

moved us to analyse the issue in more detail and to study the nature of such informal collaborations.

The purpose of this paper is to contribute to the existing literature on knowledge exchange by exploring the extent of informal collaborations in the Social Sciences and Humanities (SSH), and the context in which informality emerges. To this aim, we will first identify all the non-academic partners with whom SSH scientists in a large research organization (the Spanish Council for Scientific Research –CSIC) collaborate. We will then quantify the presence of informal collaborations in this population, and finally we will assess qualitatively the conditions under which such informal collaborations have emerged.

Similarly to Bonaccorsi and Piccaluga (1994), we characterize informality by the absence of any legal agreement of any form underpinning a collaboration between an academic institution (public research organization or university) and a non-academic partner (firms, government agencies, non-profit organizations, etc.). In contrast with previous studies, however, we establish a mutually exclusive differentiation between formal and informal collaborations: we define a collaboration between a researcher and a partner as informal when this has never been formalized through any legal instrument of any type or form involving the academic organization. In other words no aspect of the collaboration is or has been visible to the administrators in the academic organization. The very demanding conditions that this definition imposes can help us identify a type of collaboration that has not been emphasized in the literature. Research has so far suggested that informal activities can be a precursor to more formal engagement (Abreu et al., 2009; Druilhe and Garnsey, 2004), or that there is complementarity between formal and informal transfer activities (Grimpe and Hussinger, 2008), with academics engaging simultaneously in both of them (Amara et al., 2013). In contrast, by defining a collaboration as informal only when it has never been formalized, in the cases of informality we identify there is no evidence of complementarity with formal mechanisms, or of an evolution towards formality as the collaboration matures.

The remainder of the paper is structured as follows. The next section reviews the literature on University-Industry relations focusing on studies addressing informality whether directly as the main concern of the work, or only as an issue that emerged among others. Section 3 provides a description of the context of the study. Section 4

uses two complementary studies to develop empirical evidence on the extent and nature of the informal collaborations between CSIC's SSH researchers and non-academic parties. Finally, section 5 draws conclusions and policy implications.

## 2. Literature Review

Much of the extant literature in the broad fields of research impact, University-Industry relations, and technology transfer usually relies on the analysis of data derived from the formal documents underpinning the relationships across institutional boundaries. For instance, an abundant body of research on University-Industry relations draws on the analysis of patents, patent licenses, spin-off companies, and research contract revenues. The focus on documented evidence is often justifiable: the transfer to *industry* of research results for their further development and application typically entails a commercial transaction revolving around the purchase of rights to the use of Intellectual Property (IP). In this context, technology commercialization becomes a cornerstone of the efforts to apply the knowledge generated in academic environments.

Yet, the relations between academia and other societal partners involve other activities like collaborative research, conferences, informal contacts or the temporary exchange of researchers, which are not necessarily reflected in written documents or legal agreements (Meyer-Krahmer and Schmoch, 1998, p.52). These activities tend to be interactive rather than the one-way flow of technology from academia to industry inherent in technology commercialization. In response, analysts are stressing the complex iterative and self-reinforcing processes that lie behind the practical application of the outcomes of scientific research (Martin et al., 1996). Changes in the terms commonly used to describe the collaborations between academic researchers and other societal actors reflect this perception: the term "technology transfer" is progressively being abandoned in favor of broader concepts like "knowledge exchange" (Abreu et al., 2009; Hughes and Kitson, 2012).

With the growth of interest in the variety of exchange processes a problem has, however, emerged: their visibility is variable. An exchange of information conducted through a series of informal conversations cannot easily be identified, monitored and "counted"; in comparison the techniques to use patents and patent licensing data as indicators of technology transfer are well developed, the data sets increasingly

comprehensive and detailed and the analytical techniques used for their analysis increasingly sophisticated. Therefore, while the interest in the variety of “knowledge exchange” processes has increased, quantitative analysis has naturally revolved around activities that can be more easily quantified. The activities that leave traces that can be aggregated in large databases are typically linked to commercial transactions: licenses and royalty agreements, research contracts, and the property rights on which these need to be based. Analysts have made a distinction between such “formal technology transfer mechanisms” embodying or directly resulting “in a legal instrumentality” revolving around the allocation of property rights and obligations, and informal means of transfer and exchange “facilitating the flow of technological knowledge through informal communication processes, such as technical assistance, consulting, and collaborative research” (Link et al., 2007, p. 642). Examples of informal transfer include “sending technical reports to knowledge users outside the scholarly milieu, giving presentations in a technical seminar organized by firms or other types of organizations, participating in industry expert groups or expert committees that are involved in efforts to directly apply research knowledge, etc.” (Landry et al., 2010, p. 1389). A broader definition of, in this case, informal University-Industry links extends to “exchanges between firms and individuals inside the university, without any formal agreement involving the university itself. Typical examples are consultancy contracts with professors or information exchange meetings organised in an informal way.” (Bonaccorsi and Piccaluga, 1994, p. 239).<sup>1</sup> Note that Bonaccorsi and Piccaluga’s definition of informality does not exclude all exchanges using a “legal instrumentality”: a university lecturer can sign a contract with a firm as an individual without informing the university, such collaboration will not however be visible to the university and it is therefore classed as informal. From this perspective informal collaborations can also be understood as those taking place “under the radar” of the university or research centre: they are not directly visible to management.

This is not an isolated event; several studies have observed that academics do not disclose all their knowledge transfer and exchange activities to administrators (Landry et al., 2010), and that, even when inventions are formally disclosed, firms will try to conclude informal arrangements with the scientists instead of going through the formal organizational channels (Siegel et al., 2003, p.43). In fact, some evidence has been

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<sup>1</sup> We can easily broaden this definition to include all academic research organizations.

obtained suggesting that university scientists bypass their institutions to sell or license their discoveries privately (Markman et al., 2008). Individual academics may not inform their employers when they enter into individual contracts with clients and partners and, naturally, they are not required to inform their administrators every time they engage in a conversation with individuals from outside academia.

While commercialization activities formalized in legal documents leave clear traces that can be used as indicators of activity, performance, and economic impact, academics trying to analyse knowledge exchange between researchers and other non-academic partners will find informal collaborations more difficult to identify and track (Hagedoorn et al., 2000). Indeed, most of these informal collaborations will not necessarily appear “on the books” of university administration (Boardman and Ponomariov, 2009, p.142). Is this a serious problem? Is it possible that an analysis focusing on formal collaborations may not present a fair view of the collaborations between academia and industry and society? This remains a debated matter.

Based on an analysis of 2000 German manufacturing firms, Grimpe and Hussinger conclude that formal and informal means of technology transfer are complementary; therefore, “the management of the firm should [...] strive to maintain close informal relationships with universities to realize the full potential of formal technology transfer” (Grimpe and Hussinger, 2008). Amara and his colleagues reach a compatible conclusion when they show that academics tend to engage simultaneously in paid and unpaid consulting (Amara et al., 2013), and argue that informal transfer activities are key in the establishment of a “virtuous circle among the different knowledge transfer activities” (Landry et al., 2010, p. 1399). This should not come as a surprise: research suggests that formal collaborations are typically built on initially informal contacts, which improve the quality of a formal relationship (Grimpe and Hussinger, 2008). The application of knowledge generated in academia calls for an understanding of both the context of knowledge generation and the context of application. In this situation it is normal for a formal collaboration (covered by a “legal instrumentality”) to follow initial informal exchanges. Yet, in areas such as most of the experimental sciences and engineering – where research requires important investments in equipment and is linked to the development of technologies with substantial commercial potential–, firms seeking research collaboration will be looking for exclusivity in the use of the research results and will aim to impose confidentiality conditions on the researchers. The combination

of large economic costs and potentially large economic rewards, calls for the institutionalization of the transfer processes, mediated through legal instruments. Academic organizations and individuals will also seek commercial agreements that will allow them to capture part of this value. In these contexts, although the commercialization elements of “technology transfer” do not tell the whole story, it can be assumed that they are likely to be present when research generates economically valuable outcomes.<sup>2</sup> Once a contract has been fulfilled it is likely to be followed by further informal exchanges; that is, relations that do not take place within the provisions of the legal agreement. Formal and informal collaborations are thus complementary and can even be difficult to tell apart.

However, we cannot assume that this complementarity will exist under all conditions. A recent study covering more than 22,000 UK researchers across disciplines found that “academics tend to use either formal or informal channels for engagement, but rarely both” (Abreu and Grinevich, 2013, p.8). This result suggests that collaborations between researchers and non-academic partners might be conducted exclusively through informal channels without recourse to any legal instrument over time. If this were the case, recorded collaborations would hardly represent the actual extent of the collaboration between researchers and non-academic partners. The possibility that the variety of linkages may be such that it may not be adequately conveyed by data derived from formal agreements has analytical implications. Bozeman has argued that outlining the technology transfer process can become “virtually impossible” because it involves “so many concurrent processes” (Bozeman, 2000). Quantitative analyses have collected data through questionnaires trying to approximate informal transfer activities and collaborations that are not gathered through official data. For instance, Link et al. (2007) used questions from the Research Value Mapping Program Survey of Academic Researchers in the USA and analyzed the engagement of 1,514 scientist and engineering in informal technology transfer. A similar survey-based study was conducted by Grimpe and Fier (2010) among 2,797 German scientists. More recently, Amara et al. (2013)

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<sup>2</sup> Yet, this is not necessarily always the case. Feldman and Desrochers (2004) study of Johns Hopkins University discusses cases where academics refused to “dirty their hands” in the commercial world, and placed their economically valuable discoveries in the public domain.



used a survey of 2,590 Canadian researchers to address their engagement in both formal and informal consultancy.<sup>3</sup>

We follow on this literature strand by examining the extent to which the collaborations between academics and non-academic partners have remained exclusively informal and the conditions under which this occurs in a field, the SSH, where informal activities are particularly common (Abreu and Grinevich, 2013; Castro-Martínez et al., 2008; Hughes et al., 2011).

The SSH are a highly diverse area and, sometimes it is divided, both for analytical and for management purposes, between social sciences and the humanities. However, the academic organization analyzed, the Spanish Council for Scientific Research (CSIC), has kept all SSH within the same organizational unit. Furthermore, analyzing the SSH as a single group is not only a matter of convenience. Social sciences could be separated from the humanities on the basis that they involve a different approach to the generation of knowledge: while the social science would be characterized by the pursuit of general theories applicable across different contexts through the application of methodologies of a positivist persuasion, the humanities would be seen as a more reflexive endeavor, concerned with the development of narratives not aimed at the discovery of general theories and not calling for the deployment of systematic empirical evidence. This differentiation however does not stand scrutiny. Some disciplines that are traditionally considered as part of the humanities, like psychology and history, have schools of practice that deploy approaches akin to the ones that would be associated with the sciences; meanwhile some social scientists see the nature of their work as a contribution “to the reflexive analysis and discussion of values and interests” (Flyvbjerg, 2001) and are therefore closer to the views associated with the humanities. The diversity of views and methodologies that these disciplines encompass cannot be captured by a simple distinction between social sciences and humanities. It is unsurprising, therefore, that approaching the SSH as a single entity is common practice in the study of knowledge transfer, utilization, and research policy analysis (Benneworth and Jongbloed, 2010; Kastrinos, 2010; Langford et al., 2009), and we will follow this practice.

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<sup>3</sup> Amara et al. (2013) refer to paid and unpaid consultancy to distinguish between formal and informal consultancy activities.



### 3. The context: Social Sciences and Humanities at CSIC

The Spanish Council for Scientific Research (CSIC) is the largest public research organization in Spain employing more than 7,000 researchers. The studies that provide the empirical basis for this paper were conducted between 2007 and 2010. During this period CSIC grew from a staff of 12,885 distributed in 125 research institutes in 2007; to a staff of 14,144 distributed in 128 research institutes in 2010. Researchers account approximately for 60% of the total staff. The funding structure reflects the weight of tenured personnel and the public character of the organization: in 2007 68% of CSIC's budget came from core funding allocations provided by the State, and the rest was obtained through R&D contract and research projects. By 2010, the share of core funding over the total budget had dropped to 54% (CSIC, 2008, 2011).

CSIC is organized into eight “scientific areas”, one of which is “Humanities and Social Sciences”.<sup>4</sup> The SSH area is sizeable for the standards of SSH research organizations, accounting for approximately 10% of the whole CSIC researchers and staff. This organizational structure can be traced to CSIC's history. CSIC was created in 1939, after the end of the Spanish Civil War, and built on the remnants of the research centers within the dissolved Board for Advanced Studies and Scientific Research (JAE). Initially, CSIC was structured into three main areas: humanities and social sciences, technology, and experimental science. During the 1970s and 1980s new research areas were added, but the SSH were maintained as a single area including many research fields whose origins can be traced back to the political agenda of the Spanish dictatorship (imperial history, history of America, etc.). The support that these areas had received during the early decades of CSIC's existence, still explains today the weight of the humanities within the area. Later, during the Spanish democratic transition, new social science institutes were created, slightly increasing the weight of the social sciences, although the humanities continued to dominate (Fernández-Esquinas et al., 2009).

At the time the first study on which this paper is based was carried out, CSIC research activities were conducted by a large number of research groups (some formally established, others operating *de facto* without formal recognition) organized in research

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<sup>4</sup> The remaining areas are biology and biomedicine; food science and technology; materials science and technology; physical sciences and technology; chemical sciences and technology; agricultural sciences; and natural resources.

institutes, which constituted the formal administrative units. In 2010 the research groups were merged into “research lines” within the institutes; currently “groups” are being reinstated as formal units within the institutes. Throughout these administrative changes, however, the research group has remained, in practice, the organizational unit conducting research.

The SSH area is composed of 17 research institutes: 6 in social sciences and 11 in humanities. Three of these institutes are joint research institutes of CSIC and universities (IEIOP, IHCD, INGENIO), and a further three belong to CSIC and regional governments (IEGPS, IAM, IESA). In the case of joint CSIC-University institutes, contracts and agreements can be channelled either through the university or through the CSIC<sup>5</sup> (see Table A on the Appendix for further details on the SSH institutes).

At first sight, the legal context within which CSIC researchers work does not seem conducive to informal collaborations. While in many universities of different countries professors are allowed to earn supplementary money working for a percentage of their time on their own account (Göransson et al., 2009), CSIC researchers are civil servants prevented by law<sup>6</sup> from taking on additional remunerated work, with a few exceptions. Civil servants are in the exclusive employment of the State and cannot receive additional personal payments for any work related to their public service tasks, except paid teaching or lecturing assignments, up to a limit of 75 hours per year, remunerated contributions to examination and evaluation boards, and, under certain conditions, they can also receive income derived from copyrights.<sup>7</sup> In addition, the Science Law expressly allows collaboration in the design, management and evaluation of the national R&D plan.

Thus, there is a set of activities that legally can be conducted by CSIC researchers without the need for a formal contract involving a client and the researcher’s employer. The current legal framework and accepted practices allow for a range of recognized informal activities, from organization of lectures, seminars or other training activities, to

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<sup>5</sup> This has implications for our analysis since we have had to consider contracts channeled through the relevant universities in addition to those channeled through CSIC.

<sup>6</sup> Act 53/1984, 26 December 1984, on “*Incompatibilidades del personal al servicio de las Administraciones Públicas*” published in the *Boletín Oficial del Estado*, 4 January 1985.

<sup>7</sup> Note that for all other activities, channelled through formal contracts between CSIC and its clients, the researchers are entitled to receive up to 18% of the total contract value as a “productivity bonus”.

publications and media appearances, and participation in a range of advisory committees and working groups. Also, any activity carried out for free is implicitly approved and often, although not always, informal. It should be noted that CSIC researchers enjoy substantial latitude in the definition of their activities. Because the salaries of tenured researcher are covered by the organization's operational budget, any advisory or research activity requiring no other resources than the work of the researcher, could be conducted at no cost to the direct non-academic beneficiary.

## **4. Informal collaborations in the SSH: an analysis**

### **4.1. Introduction**

The empirical evidence we present here is structured into two main complementary studies. The first, conducted in 2007, is a quantitative analysis of CSIC research groups in the SSH institutes focusing on the extent to which they engage in formal or informal collaborations with non-academic partners.<sup>8</sup> The second is a qualitative analysis of a selected sample of SSH researchers and their partners to study in detail the characteristics of the collaborations they have undertaken overtime. This qualitative analysis allows us to enquire into the factors that can help explain the preeminence of informal collaborations found in the first part of the study.

### **4.2. Quantitative study**

#### *4.2.1 Data and methodology*

Our study population is constituted by all the 97 SSH research groups at CSIC. Data were collected from:

- CSIC and university databases<sup>9</sup> listing collaborations established through formal agreements (including contracts and other legal forms) between CSIC institutes and partners. We considered all the agreements in force at some point during the period 2002-2007 and we built a list of all the external partners with at least one formal agreement with a SSH research institute during that period.

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<sup>8</sup> In the following, we use the term 'partners' as shorthand for non-academic partners collaborating with researchers.

<sup>9</sup> Relevant university databases were analysed for the three joint CSIC-University institutes, for which we will also considered the contracts and agreements channeled through the universities.

- Semi-structured face-to-face interviews with representatives from all 97 research groups in all the SSH institutes. Groups were identified through institutes' web pages and the institute directors identified contact people in the groups. Groups were mainly small: more than half of them had less than 5 researchers holding a PhD degree. Interviews were held in 2007. The interviews established the groups' research activities and priorities and analyzed their collaborations with partners. We built lists of all partners identified by interviewees, with whom the groups had established collaborations in the period 2002 to 2007. Interview transcripts were sent to interviewees for validation. Group information was aggregated by institute to make it comparable with the data from the CSIC and university databases.

Therefore, the outputs of this process included two lists of non-academic organizations and a few non-affiliated individuals with whom researchers had established collaborations: one derived from the CSIC and university databases included all contacts formally established through contracts and legal forms, and the other, which was based on interview material, included all the organizations and individuals researchers mentioned as non-academic collaborators and clients.

We found a broad variety of individuals or organizations outside the academia with an interest in SSH research: CSIC SSH research groups had established collaborations with 574 different partners during the 2002-2007 period. We then checked whether the partner identified during the interviews also appeared in the CSIC and University databases: if they did not, that specific partner was classed as having an exclusively "informal collaboration" with the CSIC institute; that is, the connection was taking place without any type of formal agreement. Therefore, for each institute the partners felt into two groups:

1. *Formal collaborations* which included all partners with at least one legal agreement with CSIC or relevant University during the 2002-2007 period.
2. *Informal collaborations* which included partners with relationships with CSIC researchers but who had not entered into any legal agreement of any sort during the period 2002-2007 with the researchers' organizations.

Therefore, we are neither analysing patterns of formal and informal collaborations nor their intensity or frequency. Our focus is only on those collaborations that remain exclusively informal and we have used a very restrictive definition of “informal collaboration” to identify them. If a researcher and a partner had entered at least one agreement (a contract, a Memorandum of Understanding...) during that period, the collaboration was classed as formalized even if most of the collaborations were still being carried informally. We are interested in the “partner-institute” binomial regardless of the number of collaborations undertaken. Note that since we are comparing data at the institute level, a determined partner could collaborate with different SSH institutes leading to different “partner-institute” binomials; therefore, the number of total collaborations can be higher than the number of total partners identified over the period 2002-2007.

Finally, we considered the types of partners with whom collaborations had been established: 1) government organizations; 2) non-profit organizations, including foundations, NGOs, industry and commercial associations, and technology centres; 3) public and private firms; and 4) individuals entering relationships on their own behalf (see Table 1 for further details).

#### *4.2.2. Results*

During the 2002-2007 period, CSIC researchers in the SSH area established collaborations with 574 different partners. More than three quarters of these partners were government (39.3%) and non-profit organizations (36.2%). This figure is completed by public and private firms (23.5%) and a few individuals (1%) usually owners of properties with historical or cultural interest, who required specialist services and advice for their upkeep and preservation. A detail of the different groups of partners is presented in Table 1 below. We observe a broad diversity of activities among partners but a dominance of public sector and not-for-profit organizations.

Table 1: Partners collaborating with SSH institutes during the period 2002-2007

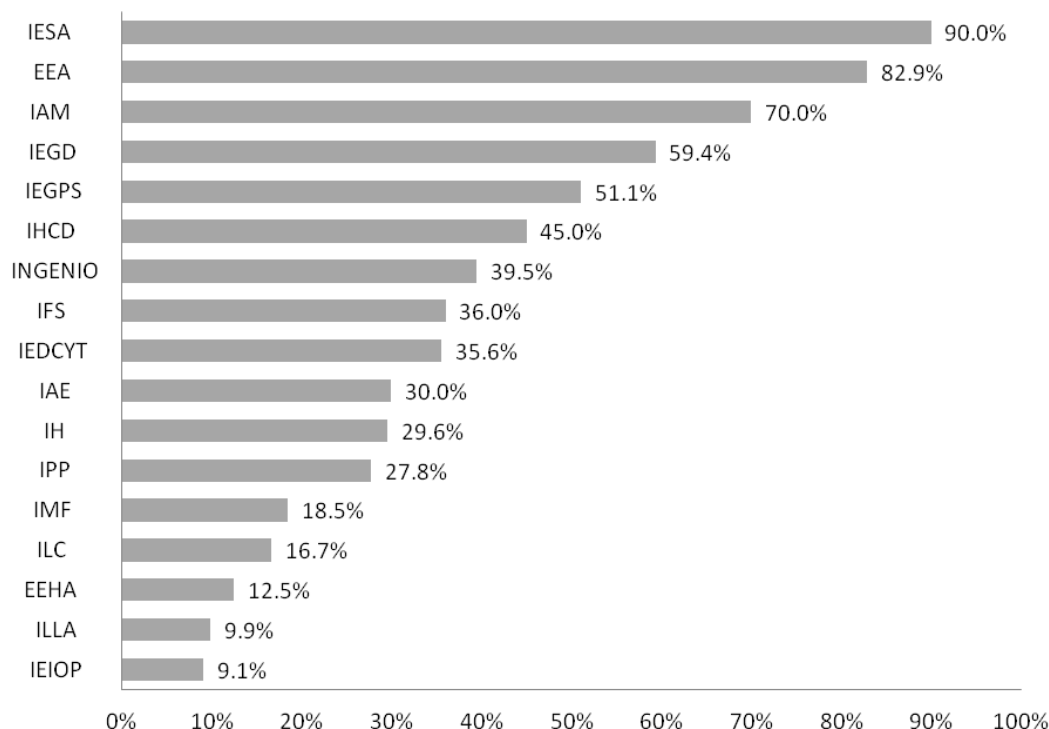
Type of partner	%	Examples
<b>Government organisations</b>	<b>39.3</b>	
• International organisations and foreign governments	6.4	Foreign museums, embassies, international organisations in areas of culture and education (e.g. European Commission, United Nations).
• Central	9.9	National museums, archives and libraries. Government departments in the areas of economic affairs and treasury, social affairs, culture, fine arts and heritage, tourism, education, health, migration, foreign affairs, labour affairs, justice, security, science and technology, environment, rural and marine affairs, agriculture, fisheries and food.
• Regional	13.2	Libraries, regional museums and regional government departments responsible for social affairs and welfare, culture, economy and finance, tourism, education, sports, health, governance, public works and transport, science and technology, industry, environment, regional land planning and public works, agriculture and fisheries.
• Local	9.8	Local museums, local Government departments responsible for economy and local development, social affairs, and culture.
<b>Non-profit organisations</b>	<b>36.2</b>	Private and public foundations and associations, trade unions, museums and churches.
<b>Firms</b>	<b>23.5</b>	Firms operating in the following sectors: publishing and media, cinema, tourism, culture, management consulting, communication and information technologies, archaeology, architecture, public works and building, gas and electricity suppliers, mining.
<b>Individual</b>	<b>1.0</b>	Owners of heritage buildings and sites.

Most of the collaborations with these partners are exclusively informal: from 662 collaborations identified between 2002-2007, 402 (61%) were classified as informal. Conversely, we labelled 260 collaborations (39%) as formal since we find traces of these relationships in the corporate databases. Disaggregating this information by research institutes, we found a slightly higher percentage of informal collaborations for the institutes working in the humanities: informal collaborations amounted to 65% of the total collaborations for the humanities institutes and to 53% for the social sciences.<sup>10</sup> Exclusively informal collaborations are predominant for 11 out of 17 SSH institutes; that is, for 11 institutes, more than half the partners that had established collaborations with members of the institute had not entered into any sort of legal agreement. Exclusively informal collaborations were particularly dominant at Institute of Islamic and Near Eastern Studies (IEIOP) and the Institute of Language, Literature and Anthropology (ILLA), where more than 90% were classed as informal collaborations.

<sup>10</sup> If we had considered the CSIC SSH institutes to be a sample of a broader population, this difference would not have been considered statistically significant. The Student's t-test indicates that the mean of the percentage of partners with informal collaborations is not significantly different between social science and humanities institutes ( $p\text{-value}=0.339$ ).

For a few institutes, however, most collaborations were classed as formal: Institute for Advanced Social Studies (IESA) (90%) and the School of Arabic Studies (EEA) (82.9%), (see Figure 1).

Figure 1: Percentage of “formal collaborations” over total number of partners involved in collaborations with each SSH institute over the period 2002-2007



Some telling differences emerge when we compare informal and formal collaborations according to the types of partners with which researchers established collaborations. Although in aggregate terms, government organizations (39.3%) are the most common partners and firms account only for 23.5%, this difference is even more marked if we restrict our analysis to formal collaborations. Almost 50% of formal collaborations are established with government organizations, while 31% are with non-profits organizations, and only 19% are with firms. Conversely, if we focus on informal collaborations, non-profit organisations emerge as the most frequent type of partner, accounting for almost 40% of all the agents with whom the CSIC SSH institutes established informally collaborations, followed by government agencies (35%) and firms (25%).

To summarize, the quantitative study highlights a prevalence of informal collaborations and a marked variety in their prevalence across institutes and across the type of partners. This suggests that a more detailed analysis is required to understand the way in which



these collaborations (formal and informal) emerge, the reasons why and the contexts where informality persists. The following section addresses these issues by analysing a sample of cases illustrating collaborations between SSH researchers and its partners.

### 4.3. Exploring informality: a qualitative study

#### 4.3.1. Data and methodology

The second stage of this analysis consists of an in-depth study of examples of collaboration between selected CSIC SSH research groups and non-academic partners. The data was gathered as part of a large project funded by the European Commission under the 7<sup>th</sup> Framework Programme to develop methodologies to assess the socio-economic impact of research ([www.siampi.eu](http://www.siampi.eu)). The method revolved around the identification of “productive interactions” (Spaapen and van Drooge, 2011) between researchers and research stakeholders. The aim of the method was to trace in detail the type of collaborations that researchers and their non-academic partners established, their context, how they developed overtime and what did they entail in terms of knowledge exchanges and eventual social impact. Here we focus on how the collaborations were organized and how they were affected by market and other contextual conditions. Our goal is to explore the conditions under which collaboration are formalized as well as the reasons underlying the prevalence of informal collaborations in the SSH.

We selected 12 cases intended to be illustrative of the variety of collaborative situations and partners we had identified; they covered instances of collaborations across all main SSH research fields and provided a spread of partners and geographical locations. The cases involved collaborations between research groups and their partners; we interviewed the group leader (typically an experienced, tenured researcher) and, for nine of the cases at least one non-academic partner involved in the collaboration under study (see Table 2 below). We conducted a total of 24 in-depth interviews. The programme of interviews was conducted during 2010 using a semi-structured questionnaire organised into three sections: the context of the research and its application environment; the direct contacts established between researchers and partners (the “productive interactions”),<sup>11</sup> and their outcomes.

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<sup>11</sup> Note that we address direct collaborations – in which the researcher can easily identify the partner and user of its research – and we do not consider indirect and diffuse ways of knowledge exchange such as publications or exhibitions.

#### *4.3.2. The cases: the nature of the collaborations*

The cases analysed provide a wide variety of instance about how SSH researchers collaborate with partners by providing evidence on the nature of these relationships and the conditions underlying them. Table 2 provides a summary of the groups interviewed and the collaborations analysed; these include both formal and informal collaborations.

Table 2: Cases analysed

SSH institutes and research groups	Partners	Nature of the collaboration and aim
ILLA: Linguistic geography and sociology ( <i>Linguistics</i> )	<b>Scientific Police- forensic laboratory</b> (national government)	Informal and personal collaborations to support specific analysis or voice recordings.
ILC: Iberian Jewish culture ( <i>Jewish Culture</i> )	<b>Association Casa Sefard-Israel</b> (non-profit organisation)	Personal and occasional assistance in dissemination events on the history of Spanish Jews.
IMF: Musicology ( <i>Music</i> )	<b>Record Producer</b> (Small firm)	Informal and personal collaborations aimed to recover music scores from the XVIth Century and transcribe them into modern notation to be played and recorded.
ILLA: Spanish theatre ( <i>Theatre</i> )	<b>National Classical Theatre Company</b> (public theatre company)	Informal and personal collaborations with researchers advising a theatre company on the performance of classical theatre.
ILLA: Heritage, memory and identity ( <i>Identity</i> )	<b>Association of Aluche-Carabanchel prison</b> <sup>a</sup> (non-profit organisation)	Informal and personal collaboration with a neighbourhood association dealing with problems associated with the management of large derelict former prison (Carabanchel) in the neighbourhood.
IFS: Philosophy after the Holocaust ( <i>Philosophy</i> )	<b>Road safety prosecutor</b> (national government)	Informal and personal collaborations to analyse the attitudes of road users towards road safety.
IEGPS: Archaeology and heritage ( <i>Archaeology</i> )	<b>Galician government</b> (regional government)	Formal agreement to provide advice and technical support on archaeological sites.
	<b>Wind Energy company</b> (large firm)	Contracts to carry out archaeological impact studies previous to engineering and construction works.
	<b>Archaeology company</b> (small firm)	Contracts to carry out archaeological impact studies previous to engineering and construction works.
IEDCYT: Scientometrics, knowledge production and transfer in health and biotechnology ( <i>Scientometrics</i> )	<b>Genoma España</b> (non-profit organisation)	R&D contracts to produce bibliometric analysis of Spanish biotechnology research.
IH: Contemporary international relations ( <i>International Relations</i> )	<b>Casa Asia</b> (non-profit organisation)	Annual formal agreements for the organisation of bilateral Spain-Philippines fora and the organization of seminars, courses and research project on the Philippines.
IESA: Social studies on immigration ( <i>Immigration</i> )	<b>Directorate General for immigration</b> (regional government)	Formal agreements to build and manage a Permanent Andalusian Observatory of Migrations. The collaboration includes the elaboration of reports.
IEGD: Economic geography and urban development ( <i>Geography</i> )	<b>Madrid City Hall</b> <sup>a</sup> (local government)	Formal agreement for the development of the Industrial Observatory of Madrid. The collaboration includes the elaboration of annual reports and monographies.
ILC: Study of Middle East manuscripts, papyrology ( <i>Manuscripts</i> )	<b>Foundation Montserrat Abbey and Compañía de Jesús</b> (non-profit organisation)	Formal agreement (without commitment of financial resources) to allow researchers' access to manuscript collections held at the Monastery of Montserrat. Researchers contribute to the identification and conservation of the manuscript collection.

<sup>a</sup> Partners not interviewed

The first observation that can be made is that informal collaborations revolved around personal contacts and were open-ended: the partner would draw on the help and assistance of the researchers as needs emerged and usually for very specific, recurrent, tasks: several lectures, a string of queries. These requests for help were underpinned by long-term personal acquaintance and bonds of trust; the partner would typically call the researchers with a specific request (for a lecture, a query or request for help) and the researcher would agree to provide help. The small magnitude of each specific request, and the economic context of the relationship obviated the need for any contractual agreement and economic compensation. For instance, a linguist would give, from time to time, his opinion on forensic work; a historian was available to participate in conferences and lectures to promote the awareness of the Sephardic legacy and the reality of Jewish communities in Spain and Israel. These collaborations were occasional, recursive and did not require additional research.

Informal links could also be more structured. A group of musicologists has developed a long-term collaboration with a specialised record producer company with the objective of recovering and recording music scores from the Spanish XVIth Century<sup>12</sup>. Part of this task involves transcribing the old music score into modern notation and to work with performing musicians; in so doing, the research have adapted their research objectives to the need of this specific community of research users. Overtime they have developed strong personal links, and the collaboration has evolved and strengthened without any formal agreement.<sup>13</sup> In this case, one reason for the absence of formal contracts is the limited economic monetary worth of the outcomes of this collaboration: Spanish XVIth Century music has a very small audience and therefore the potential income that can be derived from this activity is very small. The need for additional resources to carry out the research and collaborative work, in addition to the time of the individuals involved, is also very small. No economic exchange is required and, under these circumstances, there is no need to formalise the collaboration. The collaboration has proved to be open-ended, but more intense than in the case of recurrent small collaborations.

A similar relationship has been developed between researchers in classic Spanish theatre and the National Classical Theatre Company. Again, over the years, the Director

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<sup>12</sup> See Castro-Martínez et al., (2013) for more details on the musicology case.

<sup>13</sup> There is an agreement between the CSIC and the record producer for the edition of each music CD but not for the collaborative activity.

has drawn on the advice of the researchers, but such collaboration has not required additional financial commitments by both parties. The advice provided has helped changing the way Spanish Classical theatre is performed, changing all aspects of the performance, from props to diction. The collaboration is more involved than the mere provision of arms-length advice, but has also remained open-ended and based on personal links.

Sometimes the collaboration revolved around a specific, sizeable problem. A group of researchers working on heritage and identity issues helped a neighbourhood association to deal with a large, iconic, abandoned prison in their neighbourhood. Although the work required research, the neighbours did not have economic resources to contribute to it, and the researchers used their core funding and capabilities to work with the association, again without any formal agreement. The researchers designed a programme of action research and help the neighbourhood to deal with the variety of problems caused by having an “undesired” heritage like a large abandoned prison in their midst. Therefore, the researchers benefitted by obtaining access to a study case: pecuniary compensation was not an important consideration in their view. A similar case, where researchers obtained access to research subjects or situations, can be found in the collaboration between a group of philosophers and the road safety prosecutor; the problems the prosecutor brought to the table influenced the research strategy of the group: the road safety prosecutor contacted the group to work together in the study of driver behaviour leading to road accidents. Both parties have been working together and have organised joint seminars, workshops and other events involving additional stakeholders. Outputs of this collaboration include scientific publications and prosecutor reports to Congress on road safety campaigns and school. Again, the collaboration did not involve any financial exchange and was conducted without any formal agreement or contract.

The informality cases we have reviewed share a common trait: the motivation of the researchers to engage in the collaboration is non-pecuniary. The researchers may gain access to research material, may be moved by an interest to see their research applied, or may be interested in identifying new research topics. Instead, when pecuniary motives are present, the situation often requires formal contracts and agreements to channel the funds and establish the basis on which an exchange of money for services is conducted. Markets for research services are better established in some areas than

others. A perhaps surprising area where a large commercial market exists is archaeology: in Spain archaeological audits are required by law before starting any major civil engineering or building project. This has opened a market for specialised audits, where CSIC archaeologists have been active. The *archaeology* research group<sup>14</sup> we studied carried out archaeological impact assessment audits for wind energy companies, civil engineering and construction firms, and naturally all this work was carried out under contract.

Contractual research had also been carried out, among others, in the field of scientometrics with the foundation “Genoma España”. The goal here is the production of bibliometric studies on Spanish biotechnology. This is a continuous collaboration (7 years working together) based on a string successive R&D contracts. The work here requires the access to data that is typically generated by commercial organizations and is, therefore, costly to access.

Other formal agreements (“convenios”) are signed with government departments and other public sector organisations to frame research collaborations involving a transfer of economic resources to the research group. We identified several of these formal collaborations: archaeologists working with the Galician regional government in a variety of projects, *international relations* scholars working a public sector consortium (Casa Asia) to organise activities to promote links between Spain and the Philippines, *immigration* researchers establishing an Andalusian Observatory of Migration for the regional Directorate for Immigration Policy, and the *geography* group establishing the Industrial Observatory of Madrid for the Madrid City Hall.

In all these cases the researchers are moved, at least in part, by a pecuniary interest and deal with an organization with the capacity to make an economic contribution. Yet, “convenios” can also be signed in situation where there are no direct financial exchanges but a complex relationship that needs to be backed by some sort of legal document. An example is the agreement between papyrology scholars at CSIC, a Catalan university, Montserrat Abbey and the Jesuit order (“Compañía de Jesús”) to catalogue manuscripts held by the religious organisations. The agreement came after some years of collaboration, through which the scholars gained access to the Greek and Coptic manuscripts in exchange for help in cataloguing and maintaining the collection.

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<sup>14</sup> See Parga-Dans et al., (2012) for more details on the archeological case.

The formalization was needed to establish the conditions under which the researchers and the manuscript owners agreed to work together: the agreement established the conditions of access to the unique collection. Additionally, in exchange for their contribution, the researchers were offered free lodging at the monasteries holding the collections.

Formalisation has therefore emerged when there is a financial exchange involving both, researcher and partner, organizations, and when there is a need to formalize the conditions under which a specific work is carried out, because, for instance, access is being granted to valuable collections. This naturally occurs in the SSHs, but what the study above shows is that there is a wide set of situations under which it does not. These are discussed in the following section.

#### *4.3.3. Discussion: Explaining informality*

The analysis above suggests that informal collaborations are maintained overtime under specific conditions related to the characteristics of the partners, the researchers and the collaborative activity. Informality, in the narrow sense we have defined it here, can emerge when the researcher is not moved by pecuniary motives and is, therefore, available to collaborate with partners who have no economic resources to contribute towards the costs of the research. Two economic conditions have to be fulfilled for the researchers not to be moved by pecuniary motives: the activity must not involve substantial additional (“marginal”) costs above the direct costs of the work of the researchers’ involved, and the latter must be covered by “core” research funding or other projects. Marginal costs will be low or non-existent when collaborations are based on the accumulated knowledge of the researcher (like in the cases of *theatre*, *Jewish culture*, *philosophy*, *linguistic* in Table 2); in other words, when original research is not involved. In our cases, however, there were situations where informality existed in collaborations involving research activities. In these cases, for resources to be moved informally to research activities, there is a need for core research funding and for researchers to have the freedom to apply such core funding to the activities they choose (see *music*, *identity* in Table 2). In contexts where research is mainly funded through projects rather than core funding, informality is unlikely to emerge as often as we have seen in our study.



If these conditions are fulfilled we can then encounter a variety of non-pecuniary motivations for researchers to engage in informal research: the opportunities it can afford to researchers to access data and information, to apply research results in areas the researcher finds interesting and valuable, and to make valuable contributions to society. As Schiller would argue (Schiller 2010) one of the dimensions of informality is the existence of a set of intangible rewards.

Therefore, when non-pecuniary motivations exist, and the economic conditions allow it, it is not unusual to find collaborations that remain informal overtime. However, even under these conditions, formalising a research activity can have advantages. It can for instance help determine the responsibilities of the partners, can give legal cover in case disputes arise about the nature of the advice given or the use of partner resources, and could allow the transfer of even small amounts of economic resources. We can hypothesize that partners who fulfil the conditions to enter an informal collaboration will gauge the costs and advantages of formalization. The higher the costs of a formal engagement the more likely it is that the collaboration will remain informal. In a system that is, like the Spanish, highly bureaucratic and where administrative conditions and practices are very burdensome, we should expect informality to appear more frequently. Further, when collaboration is based on a string of small specific engagements (related to a particular and small question or problem), and when such specific issues emerge suddenly, formalization is likely to be too burdensome and too slow to compensate for the benefits it can afford both parties to the collaboration.

## **5. Concluding remarks: the implications of informality**

Despite the narrow definition of informality we used, we found that informal collaborations with partners are very common among CSIC SSH researchers, and we have found conditions under which such informality persists. These has theoretical, empirical and policy implications. From a theoretical point of view, our results suggest that there are situations in which informal and formal knowledge exchange activities may not be complementary, and that instead of informal contacts leading to formal agreements and living alongside them, collaborations may persist in their original informality for long periods of time. This has implications for data collection and interpretation.

Traditional indicators of knowledge transfer such as patenting, licensing, licensing income, contracts, and spin-offs rely on the existence of formal legal documents and will not capture collaborations that are informal in the way we have defined them here. Furthermore, neither might written questionnaires be able to capture the extent of informal collaborations. Researchers could be reluctant to compromising on paper collaborations not officially entered, or may think that such small collaboration are irrelevant. If informal links are important, responses to questionnaires will be very sensitive to the ways questions are posed and the forms in which the research design tries to capture informality.

From a policy perspective, informal collaborations remain invisible to the management processes of the research organizations within which they take place. Again, any data derived from such management sources is likely to be incomplete and biased (since the situations that lead to informality do not appear equally in all research disciplines and research management contexts). This has to be taken into account when considering the management of science and technology policies: the lack of visibility of many instances of collaboration in the SSHs has important implications for policy implementation. First, informal activities are difficult to include in institutional and individual assessments. In the Spanish context, where assessments are based exclusively on activities that can be audited, informal activities are not, for instance, taken into account when considering individual academics for promotion. This is likely to have been a disincentive to the development of these forms of interaction; finding that there is no reward or recognition for these activities some researchers may try to avoid them. Yet, trying to recognize them for evaluation and assessment purposes is not a straightforward endeavour. Attempts to identify and “count” them may lead to increased bureaucratization and the feeling among researchers of a growth in the “audit culture” and to react against it, either by keeping the activities “underground” or by ceasing to engage in them. Attempts at formally recognizing more forms of collaboration in, say, promotion decisions, may lead researchers to focus only on those activities that are “counted”. How to develop management and incentive systems that cover formal as well as informal means of collaboration remains an open challenge for research policy.

As research organisations and their funding departments recognise a need to increase the value that academic researchers can directly offer society, policies to develop technology transfer, knowledge exchange and research impact are becoming more

widespread. Yet, many of them still focus on the commercialization of research outputs and the management of IP for the generation of commercial gains, and leave unaddressed the forms of knowledge exchange in the SSH we have identified in this paper. Support to knowledge exchange in these fields requires a broader set of instruments that should go beyond commercialization support. The need to facilitate social engagement and to build social networks between academic researchers and potential partners of their research should be included in the mix of policy instruments if the objective is to improve the contribution of SSH researchers to societal development. Such policies are, however, unlikely to generate economic returns and should, besides, stay clear from attempts at formalizing the collaborations that have been established, lest this attempt become a disincentive for the same activities they aim to promote. Under these conditions assessing the effectiveness of such broadly-based knowledge-exchange support activities becomes particularly difficult.

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## Appendix 1

Table A: Social science and humanities institutes of the CSIC

Area	Nature of the institute	Acronym	Name of the institutes
H	C	IH	Institute of History
H	C	IMF	Milá and Fontanals Institution
H	C	ILLA	Institute of Language, Literature and Anthropology
H	C	ILC	Institute of Languages and Cultures of the Mediterranean and the Near East
H	C	IFS	Institute of Philosophy
H	C	EEHA	School of Hispanic Studies
H	C	EEA	School of Arabic Studies
H	J	IEIOP	Institute of Islamic and Near Eastern Studies
H	J	IHCD	López Piñero Institute of the History of Medicine and Science
H	J	IEGPS	Padre Sarmiento Galician Studies Institute
H	J	IAM	Mérida Institute of Archaeology
SS	C	IEGD	Institute of Economics, Geography and Demographics
SS	C	IEDCYT	Institute of Documentary Studies on Science and Technology
SS	C	IPP	Institute of Public Goods and Policies
SS	C	IAE	Institute for Economic Analysis
SS	J	IESA	Institute for Advanced Social Studies
SS	J	INGENIO	Institute of Innovation and Knowledge Management

H: Humanities; SS: Social Sciences

C: CSIC institute; J: Joint institute